

CRITICAL PATH ROADMAP DISCIPLINE(S)	PRIMARY SPECIES / TYPE	GROUND EXPERIMENT TITLE	NASA OBPR - TASK BOOK								
			Year Experiment Was Listed in Book								
			1995	1996	1997	1998	1999	2000	2001	2002	
Muscle Alterations & Atrophy	Animal	A DNA Chip Approach to the Discovery of Gravity Response Genes in Brain and Muscle						1999	2000	2001	2002
Muscle Alterations & Atrophy	Animal	Activity Dependent Signal Transduction in Skeletal Muscle					1998	1999	2000		
Muscle Alterations & Atrophy; Cardiovascular Alterations	Animal	Baroreflex Function in Rats after Simulated Microgravity		1996	1997	1998					
Muscle Alterations & Atrophy	Animal	Biochemical Adaptations of Anti-Gravity Muscle Fibers to Disuse Atrophy	1995	1996	1997	1998					
Muscle Alterations & Atrophy; Bone Loss	Animal	Bone and Muscle Recovery after Simulated Microgravity								2001	2002
Muscle Alterations & Atrophy	Animal	Calcium Homeostasis and muscle phenotype: Role of cellular Energetics								2001	2002
Muscle Alterations & Atrophy	Animal	Calpains in Simulated Microgravity Induced Atrophy								2001	2002
Muscle Alterations & Atrophy; Cardiovascular Alterations	Animal	Cardiac Atrophy				1998	1999	2000			
Muscle Alterations & Atrophy; Cardiovascular Alterations	Animal	Cell & Molecular Biomechanics: Cardiac & Skeletal Muscle								2001	2002
Muscle Alterations & Atrophy	Animal	Discovery and Definition of the Microgravity Transcriptome, with Application to Muscle Atrophy and Regeneration Processes								2001	2002
Muscle Alterations & Atrophy	Animal	Effect of Unloading on Protein Content in Skeletal Muscle: I. Muscle and Pharmacological Inhibitors of This Degradative Pathway; II. Effects of Unloading on Myosin Content and Isoform Specific Regul				1998					
Muscle Alterations & Atrophy	Animal	Effect of Unloading on Protein Content in Skeletal Muscle: Regulation of the Ubiquitin-Proteasome System						1999	2000		
Muscle Alterations & Atrophy; Neurovestibular Adaptation	Animal	Effects of Artificial Gravity: Central Nervous System Neurochemical Studies	1995	1996	1997	1998					
Muscle Alterations & Atrophy; Immunology, Infection & Hematology	Animal	Effects of Hind Limb Suspension on Local Inflammation and Wound Healing in a Murine Model								2000	2001 2002
Muscle Alterations & Atrophy	Animal	Effects of Hindlimb Suspension on Skeletal Muscle Growth	1995	1996	1997						
Muscle Alterations & Atrophy	Animal	Effects of Unloading on Myosin Content and Isoform-Specific Regulation in Skeletal Muscle						1999			
Muscle Alterations & Atrophy	Animal	Gene Expression Profile of Unloaded Skeletal Muscle								2001	2002
Muscle Alterations & Atrophy	Animal	Gene Expression Profiling of Unloaded Skeletal Muscle								2001	2002
Muscle Alterations & Atrophy; Clinical Capabilities	Animal	GH/IGF-1 Transgene Expression on Muscle Homeostasis				1998	1999	2000			
Muscle Alterations & Atrophy; Food & Nutrition	Animal	Glucose Kinetics and Muscle Atrophy (This Task began in FY2000)						1999	2000	2001	2002
Muscle Alterations & Atrophy	Animal	Gravitational Effects on Signal Transduction		1996	1997	1998	1999				
Muscle Alterations & Atrophy; Bone Loss; Immunology, Infection & Hematology; Clinical Capabilities	Animal	Healing Response of Injured Rodent Knee Ligaments to Hindlimb Unweighting and the Therapeutic Efficacy of Growth Hormone (This Task began in FY2000)						1999	2000	2001	2002
Muscle Alterations & Atrophy	Animal	Hyper-Dynamic Environment Program Neuromuscular Adaptations of Rhesus Macques to a Hyperdynamic Environment						1999			
Muscle Alterations & Atrophy	Animal	Inflammatory and Mechanical Components of Muscle Injury		1996	1997	1998	1999				
Muscle Alterations & Atrophy	Animal	Limb Muscle Function with Unloading and Countermeasures	1995	1996	1997	1998	1999	2000	2001	2002	
Muscle Alterations & Atrophy	Animal	Mechanical and Molecular Stimuli for Normalizing Muscle Mass During Unloading	1995	1996	1997	1998					
Muscle Alterations & Atrophy	Animal	Mechanical Signal Transduction in Countermeasures to Muscle Atrophy				1998	1999	2000	2001	2002	
Muscle Alterations & Atrophy; Cardiovascular Alterations	Animal	Microvascular Changes During Microgravity	1995	1996							
Muscle Alterations & Atrophy	Animal	Molecular Mechanisms Regulating Muscle Fiber Composition Under Microgravity				1998	1999	2000			
Muscle Alterations & Atrophy	Animal	Molecular Signaling in Muscle Plasticity				1998	1999	2000			
Muscle Alterations & Atrophy	Animal	Motoneuron Influences on Muscle Atrophy in Simulated Microgravity				1998	1999	2000			
Muscle Alterations & Atrophy	Animal	Neuromuscular and Endocrine Factors in Weightlessness-Induced Atrophy				1998	1999	2000			
Muscle Alterations & Atrophy; Bone Loss	Animal	Optimization of a Biomechanical Countermeasure for Disuse Osteopenia; Optimization of a Biomechanical Countermeasure for Disuse Osteoporosis			1997	1998	1999	2000	2001		
Muscle Alterations & Atrophy; Radiation Effects	Animal	Redox Modulation of Muscle Function in Microgravity								2001	2002
Muscle Alterations & Atrophy	Animal	Role of Growth Hormone Secretogogue and Exercise on Muscle									2002
Muscle Alterations & Atrophy	Animal	Role of Growth Hormone Secretogoues and Exercise on Muscle Homeostasis Under Microgravity						1999	2000	2001	2002
Muscle Alterations & Atrophy	Animal	Role of Muscle Loading on Mechanisms of Protein Translation and Impact on Unloading Induced Atrophy								2001	2002
Muscle Alterations & Atrophy	Animal	Signal of Muscle Atrophy in Unloading									2002
Muscle Alterations & Atrophy	Animal	Signaling of Muscle Atrophy in Unloading; Signaling of Muscle Atrophy with Unloading; Signal of Muscle Atrophy in Unloading						1999	2000	2001	2002
Muscle Alterations & Atrophy	Animal	Skeletal Muscle Growth and Repair during Microgravity				1998	1999	2000	2001	2002	
Muscle Alterations & Atrophy	Animal	The Activation of Protein Breakdown in Muscle upon Unloading and Possible Countermeasures								2001	2002
Muscle Alterations & Atrophy; Cardiovascular Alterations	Animal	Vascular Control of Skeletal Muscle Blood Flow after Simulated Microgravity				1998					
Muscle Alterations & Atrophy	Cells	Cytoskeletal Contributions to Changes in Elasticity of Mammalian Myocytes after Cycllic Mechanical Loading						1999	2000		
Muscle Alterations & Atrophy	Cells	Cytoskeletal Contributions to Changes in Elasticity of Mammalian Myocytes after Cycllic Mechanical Loading						1999	2000		
Muscle Alterations & Atrophy	Cells	Mechanical Loading, Growth Factor Release and Regulation of Skeletal Muscle Mass: A Potential Site for the Application of Microgravity-Induced Muscle Atrophy Countermeasures							2000		
Muscle Alterations & Atrophy	Cells	Mechanical Modulation of Striated Muscle Phenotype	1995	1996							
Muscle Alterations & Atrophy; Immunology, Infection & Hematology	Cells	NSCORT: Gravitational Biology; Gravitational Biology		1996	1997	1998	N/A	N/A	2001		
Muscle Alterations & Atrophy	Cells	Nutritional Modulation of Pancreatic Endocrine Function in Microgravity								2001	2002
Muscle Alterations & Atrophy	Cells	The Effect of Mechanical Unloading Upon Human Myotube Sarolemma Cholesterol Content: A Potential Site for the Initiation of Muscle Atrophy						1999			
Muscle Alterations & Atrophy; Clinical Capabilities; Cardiovascular Alterations	Human	Correlation Between Physiology and Shuttle Emergency Egress (1 year proposal)	1995								
Muscle Alterations & Atrophy	Human	Countermeasure for Microgravity-Induced Muscle Atrophy	1995	1996							
Muscle Alterations & Atrophy; Bone Loss	Human	Defining and Preventing Bone Loss: A Model for Microgravity								2001	2002
Muscle Alterations & Atrophy; Clinical Capabilities; Cardiovascular Alterations	Human	Design and Validation of a Dynamic Exercise Countermeasure Device								2001	2002
Muscle Alterations & Atrophy	Human	Effects of Bedrest on Forearm Muscle Reflexes	1995	1996	1997	1998					

